

CLAIMS

We claim:

1. A removable data storage device comprising:
 - a memory for storing data files;
 - a controller that controls data communication between the memory and a host;
 - a file management information structure including memory allocation information of each data file stored in the memory; and
 - a file usage data structure for maintaining file usage data of the data files stored in the memory based on the memory allocation information.
2. The removable data storage device as set forth in claim 1 further including a scan logic for scanning the memory allocation information of the file management information and updating the file usage data structure based on the memory allocation information and updates to the memory allocation information.
3. The removable data storage device as set forth in claim 2 wherein the scan logic is one of an embedded software on the removable data storage device including instructions executable by a processor, an embedded hardware device, or a combination of both.
4. The removable data storage device as set forth in claim 1 wherein the file management information includes at least a file allocation table having a file type and a file size for each data file.
5. The removable data storage device as set forth in claim 1 wherein the file usage data includes at least one of current usage data and history usage data.
6. The removable data storage device as set forth in claim 5 wherein the current usage data includes, for each file type of the data files, a count value and a size value, and the history usage data includes counts for additions, deletions, moves, and copies for each file type.

7. The removable data storage device as set forth in claim 1 further including a report logic that generates a file summary of the file usage data structure.
8. The removable data storage device as set forth in claim 1 wherein the removable data storage device is a memory card.
9. The removable data storage device as set forth in claim 1 wherein the memory is a non volatile storage memory.
10. A method of determining file usage information in a removable data storage device where the removable data storage device includes file management information that characterizes one or more files stored within the removable data storage device, the method comprising the steps of:
 - self-scanning the file management information;
 - determining file characteristics for each file stored in the removable data storage device based on the file management information; and
 - determining and accumulating file usage information based on the determined file characteristics and changes to the file management information.
11. The method as set forth in claim 10 further including providing a scan logic embedded within the removable data storage device.
12. The method as set forth in claim 10 wherein the determining file characteristics includes determining a file type and a file size for each file as well as counts for operations performed on a file.
13. The method as set forth in claim 12 wherein the accumulating includes, for a particular file type, accumulating a total number of files having the particular file type and a total size occupied in the removable data storage device by files having the particular file type as well as accumulation counts for at least one of additions, deletions, moves, and copies for a particular file type.

14. The method as set forth in claim 10 wherein the self-scanning is performed in response to a triggering event.

15. The method as set forth in claim 10 further including maintaining the file usage data in a data structure stored within the removable data storage device.

16. In an electronic device that generates data and includes a removable data storage device, the removable data storage device comprising:

a memory;

a controller that controls data communication between the memory and stores the data generated by the electronic device as data files within the memory;

a file management information structure containing data that represents a current state of the data files in the memory;

a scan logic that analyzes the file management information and generates file usage information over a time period; and

a file usage data structure for maintaining the file usage information.

17. The removable data storage device as set forth in claim 16 wherein the scan logic is embodied as software executable by the controller, a hardware device, or a combination of both.

18. The removable data storage device as set forth in claim 16 wherein the file usage data structure is a linked list tree structure.

19. The removable data storage device as set forth in claim 16 wherein the file usage information includes data types of the data files stored in the memory and an amount of space occupied by each data type and locations of the data files in the memory.

20. The removable data storage device as set forth in claim 16 wherein the memory is non volatile storage memory.

21. The removable data storage device as set forth in claim 16 wherein the file usage information includes at least one of current usage information and history usage information.